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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/620,361	07/17/2003	Hiroshi Sumi	Q76615	8937
23373	7590	03/25/2005	EXAMINER	
SUGHRUE MION, PLLC 2100 PENNSYLVANIA AVENUE, N.W. SUITE 800 WASHINGTON, DC 20037			NORRIS, JEREMY C	
			ART UNIT	PAPER NUMBER
			2841	

DATE MAILED: 03/25/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/620,361	<b>Applicant(s)</b> SUMI ET AL.	
	<b>Examiner</b> Jeremy C. Norris	<b>Art Unit</b> 2841	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 02 October 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4 and 6-9 is/are rejected.
- 7) ☒ Claim(s) 5 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>9-3-03</u> . | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Priority*

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 7 is rejected under 35 U.S.C. 102(b) as being anticipated by US 5,468,445 (Casey).

Casey discloses a copper paste comprising copper powder, an organic vehicle and an Fe<sub>2</sub>O<sub>3</sub> particle (see col. 4, lines 55-60 and col. 5, lines 45-55) [claim 7].

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.

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2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Examiner notes that process limitations contained within product claims are considered only to the extent to which said process limitations impact the structure of the claimed device. Furthermore, it is well settled that the presence of process limitations in product claims, which product does not otherwise distinguish over the prior art, cannot impart patentability to that product. (*In re Thorpe*, 227 USPQ 964, 966 (Fed. Cir. 1985))

Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Casey.

Casey discloses the claimed invention as described above except Casey does not specifically state that the paste comprises more than 20 parts by mass of the organic vehicle per 100 parts by mass of the copper powder [**claim 8**]. However, it is within the skill of the ordinarily skilled artisan to find the range of the paste ratios to achieve a paste having the desired viscosity. Therefore would have been obvious, to

one having ordinary skill in the art, at the time of invention, to form the organic vehicle in this ratio. The motivation for doing so would have been to allow for the paste to be easily dispensed. Moreover, it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

Claims 1 and 2 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 6,132,543 (Mohri) in view of JP 63-131405 (JP405).

Mohri discloses, referring primarily to figures 7 and 15, a wiring board comprising: a conductor layer (12); and at least one of a radiator, a connection terminal, a cover and a circuit component (not shown referred to col. 14, lines 55-65), connected to the conductor layer through a joining member (4). Mohri does not specifically state that the conductor layer comprises Fe and Cu [claim 1]. Mohri instead generically states that the conductor layer is a copper paste (see col. 9, lines 50-55). JP405 teaches a copper paste comprising copper and iron oxide (see abstract). Therefore, it would have been obvious, to one having ordinary skill in the art, at the time of invention, to use the copper paste taught by JP405 as the conductor layer in the invention of Mohri. The motivation for doing so would have been to use a paste which has good wetability to solder and bonding strength. Moreover, it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416.

The modified invention of Mohri additionally teaches, wherein a surface of the conductor layer is subjected to a plating treatment (see col. 7, lines 60-65) [**claim 2**].

Claims 1, 3, and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Morhi in view of US 5,468,445 (Casey).

Mohri discloses, referring primarily to figures 7 and 15, a wiring board comprising: a conductor layer (12); and at least one of a radiator, a connection terminal, a cover and a circuit component (not shown referred to col. 14, lines 55-65), connected to the conductor layer through a joining member (4). Mohri does not specifically state that the conductor layer comprises Fe and Cu [**claim 1**]. Mohri instead generically states that the conductor layer is a copper paste (see col. 9, lines 50-55). Casey teaches a copper paste comprising copper and iron oxide (see col. 5, lines 45-55). Therefore, it would have been obvious, to one having ordinary skill in the art, at the time of invention, to use the copper paste taught by Casey as the conductor layer in the invention of Mohri. The motivation for doing so would have been to use a copper paste having enhanced adhesion to the ceramic material (see Casey col. 5, lines 45-55).

Additionally, the modified invention of Mohri teaches coating a copper paste comprising a copper powder, an organic vehicle and an Fe<sub>2</sub>O<sub>3</sub> particle as a conductor layer on a ceramic green sheet (see Casey col. 4, lines 55-60 and col. 5, lines 45-55) [**claims 3, 6**].

Moreover, the modified invention of Morhi teaches the claimed invention as described above except it does not specifically state that the paste comprises more than

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20 parts by mass of the organic vehicle per 100 parts by mass of the copper powder [claim 4]. However, it is within the skill of the ordinarily skilled artisan to find the range of the paste ratios to achieve a paste having the desired viscosity. Therefore would have been obvious, to one having ordinary skill in the art, at the time of invention, to form the organic vehicle in this ratio. The motivation for doing so would have been to allow for the paste to be easily dispensed. Moreover, it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

### ***Double Patenting***

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

**Claims 7 and 9** are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 18 of U.S. Patent No. 6,855,399. Although the conflicting claims are not identical, they are not patentably distinct from each other because the body of claim 18 anticipates the instant claims.



***Allowable Subject Matter***

**Claim 5** is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

**Claim 9** would be allowable in the absence of the pending Double Patenting rejection.

The following is a statement of reasons for the indication of allowable subject matter: Claims 5 and 9 state the limitation "comprises a ceramic particle having an average particle size of 100nm or less". Although ceramic particles are known to be used in conductive pastes, one of ordinary skill in the art would not be motivated to add such particles to the combined teachings of Morhi and Casey since Casey specifically states that such particles are not desired (see col. 4, lines 40-50). Therefore, it is deemed that this limitation, in conjunction with the other claimed limitations was neither found to be disclosed in, nor suggested by the prior art.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeremy C. Norris whose telephone number is 571-272-1932. The examiner can normally be reached on Monday - Friday, 9:30 am - 5:30 pm.

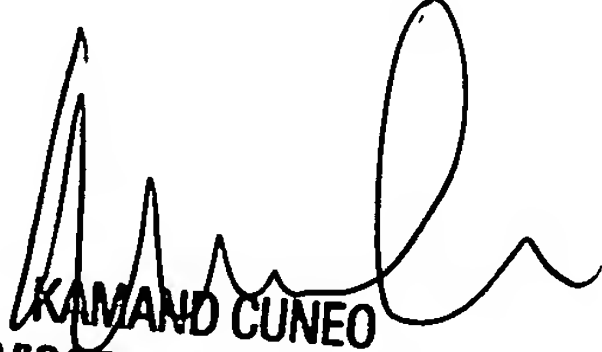
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kamand Cuneo can be reached on 571-272-1957. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.



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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JCSN

  
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